

SON-2029  
(88001-2029)

PATENT APPLICATION



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Patent Application of:

Koichiro Kishima et al

Group Art Unit: 1774

Application No.: 09/731,904

Examiner: Lawrence D. Ferguson

Filed: December 8, 2000

**Confirmation No. 1187**

For: Optical Recording Medium and a Method of Manufacturing the Same

**APPEAL BRIEF UNDER 37 C.F.R. 1.192 INCLUDING MINOR AMENDMENT  
UNDER 37 C.F.R. 1.116**

**MS APPEAL BRIEF - PATENTS**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Sir:

This appeal brief is in furtherance of the Notice of Appeal, filed October 31, 2003, seeking a review and reversal of the Final Rejection of the claims on appeal.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF. It is noted that this Appeal Brief is also accompanied by an Amendment After Final Rejection incorporated into claim 1 in the appendix, addressing several minor matters of form relating primarily to typographical errors noted during the preparation of this brief. Entry of this after final amendment is solicited in that it reduces issues for appeal, clarifies the subject matter claimed, and requires no significant effort in its consideration by the examiner. It is assumed that those changes will be entered for purposes of this appeal, but even if not entered, those changes do not affect the stated merits of this appeal.

This brief is transmitted in triplicate, as required.

This brief contains items under the following headings as required by 37

C.F.R. § 1.192 and M.P.E.P. § 1206:

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**I. REAL PARTY IN INTEREST**

The real party in interest for this appeal is Sony Corporation ("Sony ") of Tokyo, Japan. An assignment of all rights in the present invention to Sony was executed by the inventors and recorded by the United States Patent and Trademark Office on reel 0-011730, frame 0462, recorded on April 20, 2001. The term "Applicant" as used herein, unless the context dictates otherwise, refers to the assignee, Sony Corporation.

**II. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

**III. STATUS OF CLAIMS**

**A. Total Number of Claims in Application**

There are thirty-three (33) claims pending in application.

**B. Current Status of Claims**

1. Claims canceled: 2 to 4, 6 to 9, 15 and 16.
2. Claims withdrawn from consideration but not canceled:  
19 to 34 (as drawn to a non-elected invention)
3. Claims pending: 42, of which 15 claims are pending on appeal.
4. Claims allowed: none
5. Claims rejected: 1, 5, 10 to 14, 17, 18, 35, and 38 to 42

6. Claims Objected to, but allowable: 36 and 37.

C. Claims On Appeal

The claims on appeal are claims 1, 5, 10 to 14, 17, 18, and 35 to 42.

**IV. STATUS OF AMENDMENTS**

A first non-final Office Action was mailed on July 2, 2002, rejecting claims 1 to 18 and withdrawing claims 19 to 34 from consideration. In response thereto, a Request for Reconsideration was filed May 28, 2002 canceling claims 7, 13 and 16, amending claims 1 and 9 and adding new claims 35 to 41.

In a first final Office Action mailed on August 13, 2002, claims 1 to 18, 35, and 38 to 41 were rejected, claims 36 and 37 were objected to, and claims 19 to 34 still stood withdrawn as directed to a non-elected invention. In response thereto, a Request for Reconsideration was filed on October 11, 2002, amending claim 12.

A second non-final Official Action re-opening this case was mailed November 8, 2002 further rejecting claims 1 to 18, and 38 to 41, and objecting claims to 36 and 37. Claims 19 to 34 still stood as withdrawn. In response thereto, a Reply Under 37 CFR 1.111 to Non-Final Office Action was filed on April 3, 2003, canceling claims 2 to 4, 6 to 9, 15, and 16, and amending claims 1, 5, 10, 14, 36, and 38, and adding new claim 42.

A second final Office Action mailed on June 13, 2003 rejecting claims 1, 5, 10 to 14, 17, 18, 35, and 38 to 42 and objecting claims to 36 and 37. In response thereto, A Request for Reconsideration was filed on June 24, 2003 seeking review of the prematurity of the final rejection within the final office action.

Still another (a third) final Official Action was mailed on July 21, 2003 withdrawing the previous final office action of June 13, 2003 in response to our Request for Reconsideration filed on June 24, 2003. Claims 1, 5, 10, 14, 36, 38 to 42 remain rejected and claims 36 and 37 remain objected.

A Request for Reconsideration was filed on October 1, 2003, requesting reconsideration of the third Final Action. An Advisory Action was mailed on October 15, 2003 stating that the Request for Reconsideration was considered but does not place

the case in condition for allowance and stating that the pending claims are 1, 5, 10 to 4, 17, 18, 34 and 38 to 42.

A Notice of Appeal was filed on October 21, 2003. The claims on appeal are pending.

In summary, therefore, the issues presented for this appeal appear in the third Final Action of July 21, 2003, a refusal to find persuasive the Request for Reconsideration filed on October 10, 2003, and the reasons advanced in support of maintaining the rejection as found in the Advisory Action of October 15, 2003.

## **V. SUMMARY OF INVENTION**

### **Background**

The application that provides the underpinning for the issues to be considered contained 53 pages as filed, including the original claims, with eleven (11) figures of drawings. The invention relates generally to an optical recording medium and a method of manufacturing the same, especially when an optical lens and the optical recording medium are within 200 nm or less to each other, sometimes referred to as "near field" optical recording.

The Description of the Related Art at pages 1 to 9 is instructive in describing prior related optical recording media. Beginning at the paragraph beginning at the bottom of page 4 of the Description of the Related Art, a constraint on near-field optical recording media is noted; that is, the optical disk needs to have its surface flattened with a high precision and to have no projection on its surface. Further difficulties in forming a protection layer are also discussed, especially with respect to the convexities and concavities on the recording layer of the optical recording disk. This section thus evidences problems with the related art recording media that are not solved so summarily as the Examiner suggests in his several final actions.

A recap of features and advantages of the invention is found at page 40, line 12 to the end of page 41. A Summary of features of the invention is also found at page 9, line 12 to page 13, line 2.

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The Claims on Appeal and Support for the Claimed Limitations

Claims 1 to 18 and 35 to 42 are drawn to a structure of an optical recording medium that read primarily on Figs. 1, 2, 9 and 10. In particular, Fig. 1, for example, is discussed at pages 14 (bottom paragraph to page 21, second full paragraph). There, referring to the recitations of claim 1 and Fig. 1, for example, an optical recording medium M is disclosed for performing at least one of recording and reproduction of information by irradiation of light. The medium M has a substrate 1 (page 15, line 3) which has concavities and convexities 2 formed on a surface thereof (page 15, lines 3 to 8). A formed film layer 3 is provided on the surface of the substrate having fine concavities and convexities 3s (page 15, second full paragraph), and constitutes a recording layer.

A light transmission flattenable film 4, discussed beginning at the first full paragraph on page 18 buries the fine concavities and convexities surface 3s, and has a transmission characteristic with respect to the irradiated light onto the optical recording medium M. Its surface is polished and has a hardness enabling it to be polished and thereby flattened. See page 18, first full paragraph.

The light transmission flattenable film consists of inorganic flattenable material having a thickness that is 400 nm or less, see the first full paragraph on page 19 of the specification as filed.

Claim 2 recites the preferred materials for the inorganic substrate as polyether sulfone (PES) or polyether imide (PEI) as described on the paragraph spanning pages 19 and 20.

Claim 10 recites that the thickness of the light transmission flattenable film is 100 nm or less; Claim 11 recites that the film consists of spin-coat flattenable material having SiO<sub>2</sub> as a main component. Claim 12 has a feature relating to the flatness of the film, and claim 13 relates to the concavities and convexities. Claims 14, 17 and 18 relating to a backing layer (Figs. 2, 9 and 10), a material layer having a phase that is changed by the irradiation of light, and a recording layer that relates to the change of magnetization changed by the irradiation of

light. Claim 35 notes that the film is "capable of" being polished as a physical feature of the film of importance for reasons stated throughout the specification.

Claims 36 to 42 best relate to Figs 2, 9 and 10 for various features of the optical recording medium, supported by the specification.

## **VI. ISSUES**

The Final Action phrases the overall issue as one of whether claims 1, 10 to 14, 17, 18, 35 and 38 to 42 are obvious over USP 5,972,459 to Kawakubo, in view of USP 5,635,267 to Yamada, further in view of USP 4,650,742 to Goto. It phrases a further rejection of claim 5 as unpatentable over those three references applied above, further in view of Katsuragawa, USP 6,187,431.

Thus, the issues generated by these rejections are:

1. Assuming arguendo that the factual findings of the Examiner are correct, whether a prima facie case for obviousness has been established on this record by a proper showing of each limitation of the claims in the proposed combination and a motivation to make the combinations proposed.

2. However, the factual findings of the examiner as to the three and/or four references are either correct or suspect as noted in this section, for the correct findings support the argument of the Applicant.

3. Whether, on this record, the recited thickness, is an optimizable features that is result effective and whether supporting findings are found in the art or in the Applicant's specification.

4.. Whether "flattenable" as used in the claims is a capable of a function" limitation or a characteristic of the claimed member.

5. Whether claim 5, subject to all of the arguments above, is obvious over the references applied.

## **VI. GROUPING OF CLAIMS**

For purposes of this appeal, each of the claims stands or falls separately for the reasons stated in the appropriate sections of the argument, in that each depends directly or indirectly on a rejection that is not a prima facie rejection, and for the additional reason that the limitations of each of the claims makes each of the claims independently patentable on this record, for the rejections as applied.

## **VII. ARGUMENTS**

Thus, the responsive arguments to the issues generated by these rejections are:

1. Assuming arguendo that the factual findings of the Examiner are correct, whether a prima facie case for obviousness has been established on this record by a proper showing of each limitation of the claims and a motivation to make the combinations proposed.

As noted, it is assumed for purposes of this responsive argument that each of the factual findings of the examiner is correct. It is here contended however that the Final Action fails to make a prima facie case of obviousness because the references proposed to be combined do not meet all of the limitations of the pending claims, and because there is not a sufficient motivation for their combination stated. We turn first to the limitations.

The Final Action asserts that Kawakubo does not disclose the claimed film thickness, contending that thickness is an optimizable feature that is result effective, thus concluding that it would have been obvious to one of ordinary skill in the art to

optimize the components because discovering an optimum or workable range is of routine skill in the art. The Final Action further asserts that Kawakubo does not disclose the light transmission film consisting of inorganic flattenable material having a thickness of 400 nm or less. Further, it is admitted that Kawakubo does not disclose spin-coating or changing from an amorphous state to a crystalline state.

The final Action turns to Yamada for a teaching of a polishing process of the recording medium produced by spin coating and reversible phase changing (see page 4 of the Final Action). From these more Spartan teachings, the Final Action concludes that Yamada teaches that the polishing helps smooth out the surface from unevenness and the spin coating helps protect the information recording medium from environmental hazards. These teachings are better found in the Applicant's specification rather than in the Yamada reference, rephrased as stated in the Final Action. The final Action notes that neither Kawaka nor Yamada explicitly teaches hardness, but concludes with the benefit of hindsight that it would have been expected for the layer to have hardness as claimed. That is, it is admitted that neither of the references thus discussed teaches a hardness enabling it to be polished as claimed.

The Final Action continues noting deficiencies of the references. Although neither Kasakubo nor Yamada discloses a light transmission layer composed of inorganic material (page 4, Final Action, bottom paragraph), it alleges that Goto teaches this feature. But it is not alleged that Goto teaches an inorganic flattenable material having a thickness that is 400 nm or less.



Accordingly, all of the features of claim 1 are not found in the references applied; this itself leads to the conclusion that a prima facie case of obviousness is not made. While the rejection advanced by the examiner might have been more understandable if it were mapped against the exact and complete limitations of the claims pending, it remains that there is an insufficient basis to support the legal conclusion of obviousness. Much is left to conjecture or speculations to meet the limitations of the claims.

For these reasons, therefore, claim 1 is substantively patentable, and therefore each of the claims dependent on or through claim 1 is independently patentable. In sum, only the limitations of claim 5 are separately supported in the Action, while the limitations of each of claim 10, 12, 13, 14, 18, 35, and 36 to 42 are not separately addressed in the Final Action. To the extent that claims 11 and 17 are not separately addressed, their rejection must also fall as not being a prima facie obvious rejection. More probatively, claims 37 to 42 are not well mapped against the teachings of the references, so that each of these claims is independently patentable for failure to make a prima facie case of obviousness. The following principles from In re Rijckaert, 9 F. 3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) apply:

"In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)... 'A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested

the claimed subject matter to a person of ordinary skill in the art.' In re Bell, 991 F.2d 781,782, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting In re Rinehart, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)". The treatment afforded the pending claims fails to meet these standards at the very least because the claimed subject matter is not taught or suggested in the art combined, taken as a whole, and the subject matter of each of the pending claims has not been separately shown.

We turn now the motivation arguments. In addition to the above, the examiner is required to provide reasons why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine the prior art references to arrive at the claimed invention. The requirement is founded on reasons, not on conclusions as stated in the final Action. Such reasons must stem from some teachings, suggestion or implication in the prior art as a whole or from knowledge generally available to one having ordinary skill in the art. ACS Hosp. Sys., Inc. v Montefiore Hosp., 732 F.2d 1572, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings, not conclusions, are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2 1443, 1444 (Fed. Cir. 1992). "Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor".

For at least these reasons, all rejections of all claims should be reversed.

2. However, the factual findings of the examiner as to the three and/or four references are either correct or suspect as noted in this section, for the correct findings support the argument of the Applicant.

The findings for which there is no significant dispute are discussed in Section 1 above. However, the examiner contended that the limitations of the second paragraph of claim 1, i.e. on a substrate with fine concavities and convexities formed on a surface thereof on a side onto which said irradiation of light is performed is a product by process limitation. These words are words of limitation on the characteristics and physical attributes of the substrate, and not product by process limitations at all. See MPEP 2113. Nothing in claim 1, or in any later claim provides true process limitations for the word "formed" or on which light is "performed".

As to the critique of the formation temperature and state of magnetization changed by the irradiation of light, it is not readily seen to which claims this argument is supplied. Withdrawn claim 25 is a method claim that speaks in terms of temperature of formation. As to the state of magnetization, such as in claim 18, those limitations are characteristics and features of the material claimed, not a process for forming the material.

3. Whether, on this record, the recited thickness is an optimizable features that is result effective and whether supporting findings are found in the art or in the Applicant's specification.

The Final Action had contended that thickness is an optimizable feature that is "result effective", whatever that means in this context. At best, this might refer to a thickness of Kawakubo, but the Final Action fails to assert that Kawakubo discloses the film thickness. And, if the assertion is intended to cover the film thickness of the combination, there is nothing taught in the combination that meets the limitations of claim 1 (400 nm or less) or claim 10 (100 nm or less). The examiner's assertion that 0 nm meets this limitation (i.e. its "or less" component), this argument must fall because the limitation is positively claimed, and a zero thickness would eliminate that limitation in the claim, and thus alter the claimed combination.

When so interpreted therefore, these points aid the argument in point 1 above, noting that even if this Board does not agree with these arguments, the points made in point 1 above continue to be persuasive.

4. Whether "flattenable" as used in the claims is a capable of a function" limitation or a characteristic of the claimed member.

Finally, as asserted consistently in this record, "flattenable" is a physical characteristic of the material of the light transmission flattenable film, as a present limitation, not one that jumps into being at some later time when the film is flattened. It

is a present characteristic of the film. See MPEP 2113 where it is noted that words like "intermixed" are structural limitations.

5. Whether claim 5, subject to all of the arguments above, is obvious over the references applied.

The foregoing analyses of points 1 to 4 above apply with equal vigor to claim 5, the rejection of which differs only in that a fourth reference is used. The deficiencies of the combination as to claim 1 remain, and the motivation to turn from the first three references applied to the fourth reference is not found in the art itself, but rather in the hind sight analysis gathered with the luxury of the hindsight analysis.

**IX. CONCLUSION**

It is respectfully submitted that the Examiner had failed to establish a *prima facie* case of obviousness for the reasons set forth above. It is respectfully requested the Board overturn the rejection and allow the pending claims. When allowed, withdrawn claims should be reexamined for rejoinder under MPEP 821.04 where, following restriction between product and process claims and election of product claims, when product claims are allowed, process claims are rejoined if the tests there stated are met.

Dated: December 22, 2003

Respectfully submitted,

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## **APPENDIX A**

### **Claims Involved in the Appeal of Application Serial No. 09/731,904**

1. (Contemporaneously amended) An optical recording medium for performing at least one of recording and reproduction of information by irradiation of light, comprising;

on a substrate with fine concavities and convexities formed on a surface thereof, on a side onto which said irradiation of light is performed, a formed film layer the surface of which is made a surface of fine concavities and [convexties] convexities representing said fine concavities and [convexties] convexities and which has at least a recording layer; and

a light transmission flattenable film which buries therein the fine concavities and convexities surface, and which has a transmission characteristic with respect to the irradiated light, and which has its surface polished and has a hardness enabling it to be polished,

wherein said light transmission flattenable film consists of inorganic flattenable material having a thickness that is 400 nm or less.

2. Cancelled

3. Cancelled

4. Cancelled

5. The optical recording medium according to claim 1, wherein the substrate consists of organic material substrate made of polyether sulfone (PES) or polyether imide (PEI).

6. Cancelled

7. Cancelled

8. Cancelled

9. Cancelled

10. The optical recording medium according to claim 1, wherein the thickness of the light transmission flattenable film is 100 nm or less.

11. The optical recording medium according to claim 1, wherein the light transmission flattenable film consists of spin-coat flattenable material having SiO<sub>2</sub> as a main component.

12. The optical recording medium according to claim 1, wherein the light transmission flattenable film has a level of flatness by having protrusions eliminated that damage an optical system disposed in the proximity of and in opposition to the surface of the light recording medium and performs the irradiation of light.

13. The optical recording medium according to claim 1, wherein the fine concavities and convexities have lands and grooves;

the difference in level between the land and the groove is selected to be at a value which only causes mutual interaction between these two to less occur with respect to the irradiated light; and

the recording of the information is performed with respect to the recording layer of either, or both, of the land and the groove.

14. The optical recording medium according to claim 42, wherein a backing layer of dielectric material is formed on a surface where the light transmission flattenable film is formed.

15. Cancelled

16. Cancelled

17. The optical recording medium according to claim 1, wherein the recording layer has a material layer the phase of which is changed by the irradiation of light from an amorphous state of low reflectance to a crystalline state of high reflectance or vice versa.

18. An optical recording medium according to claim 1, wherein the recording layer has a material layer the state of magnetization of which is changed by the irradiation of light.



19. (Withdrawn) A manufacturing method of an optical recording medium for performing at least one of recording and reproduction of information by irradiation of light, comprising:

a manufacturing step of manufacturing a substrate having fine concavities and convexities formed on the surface thereof on a side onto which the irradiation of light is performed;

a forming step of forming a formed film layer the surface of which is made a fine concavities and convexities surface reflecting the fine concavities and convexities on itself and which has at least a recording layer;

a forming step of forming a light transmission flattenable film which has buried in the formed film layer the fine concavities and convexities surface, and which has a transmission characteristic with respect to the irradiated light, has its surface polished and has a hardness enabling it to be polished; and

a polishing step of polishing at least the surface of the light transmission flattenable film.

20. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein before executing the forming step of forming the light transmission flattenable film there is executed a step of eliminating or truncating protrusions on the surface of the substrate.

21. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the polishing step is a flying tape polish (FTP) step.

22. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein in the forming step of the formed film layer there is executed a step of forming a reflection film on the substrate.

23. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the forming step of the formed film layer uses a method of forming a film by sputtering.

24. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the formation of the light transmission flattenable film is performed at a temperature of 150°C or less.

25. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the substrate is formed using an organic substrate material; and

the formation of the light transmission flattenable film is performed at a temperature of 150°C or less.

26. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the formation of the light transmission flattenable film is performed using a spin-coating method of inorganic material.

27. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the formation of the light transmission flattenable film is performed to a thickness of 400 nm or less.

28. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the formation of the light transmission flattenable film is performed to a thickness equal to or smaller than the thickness of the formed film layer.

29. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the light transmission flattenable film is formed using a spin-coating method of performing spin-coating with respect to a flattenable material having SiO<sub>2</sub> as a main component.

30. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the fine concavities and convexities have lands and grooves;

the difference in level between the land and the groove is selected to be at a value which only causes mutual interaction between these two to less occur with respect to the irradiated light; and

the recording layer of either, or both, of the land and the groove is used as a recording portion of the information.

31. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein after executing the forming step of the formed film layer having at least the recording layer there is executed the forming step of the light transmission flattenable film via a step of forming a dielectric backing layer on the surface of the formed film layer.

32. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein after executing the forming step of the formed film layer having at least the recording layer there is executed the forming step of the light transmission flattenable film via a step of forming a dielectric backing layer on the surface of the formed film layer; and

the dielectric backing layer is formed using a material layer to enhance the surface hardness of the optical recording medium.

33. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the recording layer is formed using a material layer the phase of which is changed by the irradiation of light from an amorphous state of low reflectance to a crystalline state of high reflectance or vice versa.

34. (Withdrawn) The manufacturing method of an optical recording medium according to claim 19, wherein the recording layer is formed using a material layer the state of magnetization of which is changed by the irradiation of light.

35. The optical recording medium according to claim 1, wherein said light transmission flattenable film is capable of being polished.

36. The optical recording medium according to claim 42, wherein said backing layer is a first dielectric, said light transmission flattenable layer is a second dielectric, and said surface layer is a third dielectric.

37. The optical recording medium according to claim 36, wherein said first dielectric, said second dielectric and said third dielectric are the same dielectric.

38. The optical recording medium according to claim 42, wherein said light transmission flattenable film is on said formed film layer.

39. The optical recording medium according to claim 38, wherein said backing layer is on said formed film layer, said light transmission flattenable layer is formed on said backing layer, and said surface layer is on said light transmission flattenable layer.

40. The optical recording medium according to claim 1, wherein said formed film layer includes a reflection film, a first dielectric film and a phase change recording layer.

41. The optical recording medium according to claim 40, wherein said reflection film is formed on said substrate, said first dielectric film is formed on said reflection film, and said phase change recording layer is formed on said first dielectric film.

42. The optical recording medium according to claim 1, wherein said light transmission flattenable film includes a backing layer, a light transmission flattenable layer and a surface layer, said backing layer being above said formed film layer, said light transmission flattenable layer being above said backing layer, said surface layer being above said light transmission flattenable layer.